

Amendments to the Claims

1. (currently amended) A method for processing radio frequency (RF) signals in a multi-antenna ~~systems~~ system, comprising:

generating L_t input data streams in a transmitter, where L_t is an integer;

modulating the L_t input data streams to RF signals;

switching the RF signals to $t \geq L_t$ RF branches, where t is an integer and $t \geq L_t$;

applying a phase-shift transformation to the RF ~~signals~~ branches by a $t \times t$ matrix multiplication operator Φ_1 , whose output are t RF signals;

transmitting the t RF signals over a channel by t transmit antennas;

receiving the transmitted signals by r antennas in a receiver, where r is an integer;

applying a phase-shift transformation to the r RF signals by a $r \times r$ matrix multiplication operator Φ_2 to generate r streams;

selecting L_r branches from the r streams, where L_r is an integer;

~~demodulated~~ demodulating the L_r signal streams; and

processing the demodulated L_r signal streams in baseband to recover output data streams corresponding to the input data streams.

2. (original) The method of claim 1, in which each of the L_t input data stream has a weight, and further comprising:

summing the L_r weighted data streams before the demodulating and decoding.

- 1 3. (original) The method of claim 1, in which the L_t input data streams are
2 generated by a space-time block coder.
- 1 4. (original) The method of claim 1, in which the L_t input data streams are
2 generated by a space-time trellis coder.
- 1 5. (original) The method of claim 1, in which the input data streams are
2 space-time layered structures.
- 1 6. (original) The method of claim 1, in which $t = L_t$, and the matrix Φ_1 is an
2 identity matrix.
- 1 7. (original) The method of claim 1, in which $r = L_r$, and the matrix Φ_2 is an
2 identity matrix.
- 1 8. (original) The method of claim 1, in which entries of the matrix Φ_1 have
2 constant modulus phase-only terms.
- 1 9. (original) The method of claim 1, in which entries of the matrix Φ_2 have
2 constant modulus phase-only terms.
- 1 10. (original) The method of claim 1, in which entries of the matrices Φ_1 and
2 Φ_2 have constant modulus phase-only terms.
- 1 11. (currently amended) The method of ~~claims 8~~ claim 8, in which the
2 phase-only terms adapt to an estimate of an instantaneous channel state.

- 1 12. (original) The method of claim 8, in which the phase-only terms adapt to
2 an estimate of an average channel state.
- 1 13. (original) The method of claim 1, in which the matrix Φ_1 is a fast Fourier
2 transform matrix.
- 1 14. (original) The method of claim 1, in which the matrix Φ_2 is a fast Fourier
2 transform matrix.
- 1 15. (original) The method of claim 1, in which the matrices Φ_1 and Φ_2 are
2 fast Fourier transform matrices.